

Biological Research in Canisters for OptiCells™ (BRIC-Opti).

The BRIC-Opti system is designed to:

- Provide a closed environment with an atmosphere of known initial composition for microbial growth
- Provide a support structure for four self-contained COTS OptiCell™ culture chambers
- Provide two redundant levels of containment for potentially hazardous materials
- Provide autonomous temperature data logging at each of three physical locations within each canister

The experiment, *Passive Observatories for Experimental Microbial Systems (POEMS)*, which flew on STS-121 and ISS increments 13 and 14, utilized the BRIC-Opti hardware. Ten BRIC-Opti canisters were flown (Figure 1-1).

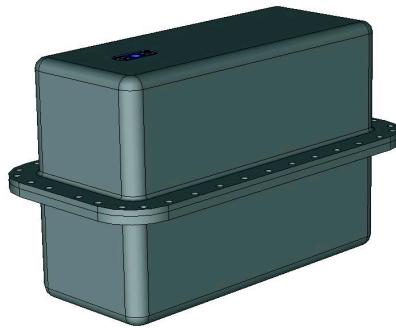


Figure 1-1: Assembled BRIC-Opti Canister (P/N 1015-M-3000-20)

The BRIC-Opti is a sealed aluminum container providing two levels of containment during all phases of operation. The BRIC-Opti has no active thermal control, and specimens are specifically selected to be tolerant of the ambient thermal environment onboard spacecraft.

Each BRIC-Opti contains four subelements called OptiCells™ that are commercially available from BioCrystal, Ltd. The OptiCell™ (P/N 1100) comprises a sealed polystyrene frame with two gas-permeable polystyrene windows. Two self-sealing septa permit introduction of media and inoculum into the interstitial space between the membrane windows (Figure 1-2).

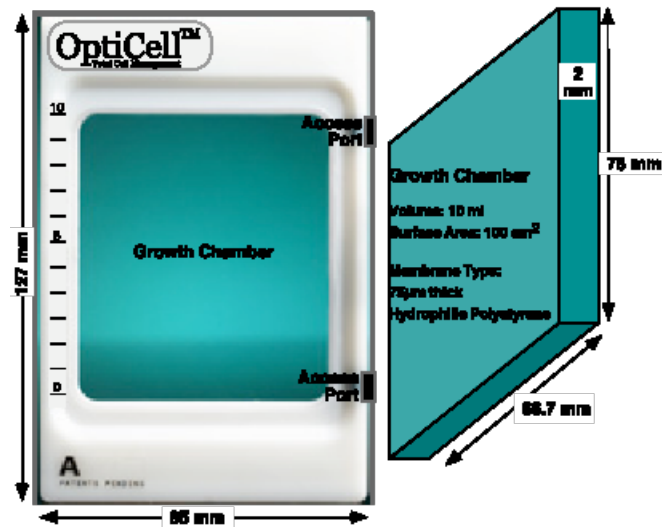


Figure 1-2 OptiCell™ (P/N 1100)



Figure 1-3: HOBO® (P/N H08-007-IS)

Each BRIC-Opti also contains a single autonomous multichannel data logger made by Onset Corporation. The HOBO® (P/N H08-007-IS) provides sensors for relative humidity and three channels of temperature (Figure 1-3). The data logger includes two T-type temperature sensors (not shown) attached by short cables. The data loggers are activated prior to final canister integration and read out postflight. Only the circuit board and attached thermocouples of the COTS data logger are incorporated into the BRIC-Opti design.

Ten integrated BRIC-Opti assemblies can be stowed in the middeck of the Space Shuttle. They are sized to fit within an SSP-provided half-locker tray as shown in Figure 1-4. BRIC-Opti assemblies can also be stowed in an equivalent cargo transfer bag (CTB).

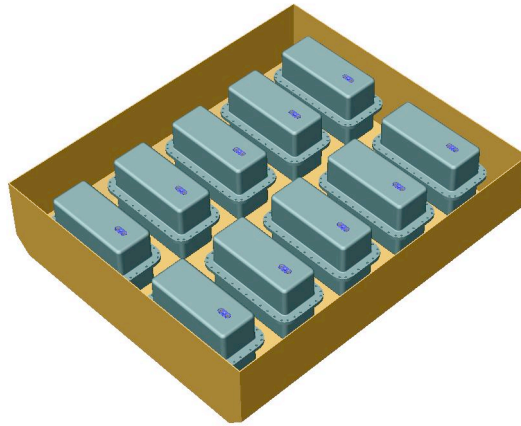


Figure 1-4: BRIC-Opti Canisters in Proposed Stowage Configuration